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DISCLOSURE TEXT:

2p. This system is designed to greatly simplify the procedure of plasmapheresis and to shorten the time required for the medical personnel as well as the donor. The basic attribute is in making the withdrawal of whole blood and reinfusion of packed red blood cells continuous. While this is happening, the plasma is being collected in special compartments in a container inside a spinning centrifuge bowl.

- A simplified schematic of the system is shown in Fig. 1. Blood is drawn from an arm vein of the donor, mixed with anticoagulant, and pumped by the whole blood pump P1 into the rotating centrifuge 3, of the type disclosed in U. S. Patent 3,737,096. The centrifuge bowl contains a disposable plastic bag 5 with a configuration as shown in Fig. 2.

- The whole blood is delivered to the circumference as shown. As

it flows around the circumference, it separates into packed red cells and plasma. At a point diametrically opposite to where the whole blood was delivered, the packed red cells are removed via the RBC pump P2. By controlling the relative flow rates of the whole blood and RBC pumps, plasma can be made to accumulate in the bag 5. The only place it can accumulate is in the two pouches marked "PLASMA COLLECT VOLUME".

- Meanwhile, the packed red cells are being returned to the donor via pump P2. When two units (about 500 ml) of plasma have been collected, the whole blood pump P1 is stopped and the RBC pump P2 continued until plasma begins to be drawn into the RBC line. This is to allow a maximum amount of RBC to be returned to the donor. At this point, the RBC pump P2 is shut down and the centrifuge stopped.

The cover is lifted and the tubing closures are sealed off with a clamp. The two plasma pouches can be removed by tearing the bag along the line 9 which is a tear seal. In addition, the bag 5 is cut just beyond the clamps on the closures. The plasma pouches are lifted from the centrifuge bowl. They each contain about one unit of plasma.

- An alteration to the above procedure would allow the collection of platelet concentrate from a donor. After the two units of plasma have been collected, the pumps P1, P2 are stopped and the centrifuge bowl 3 allowed to spin for several minutes. During this time, platelets in the platelet-rich plasma will settle to the outside wall. Then the RBC pump P2 can be turned on to remove most of the

plasma. When this is removed, the whole blood pump P1 is again started and two more units of plasma collected. In this way, many units of single-donor platelet concentrate can be collected.

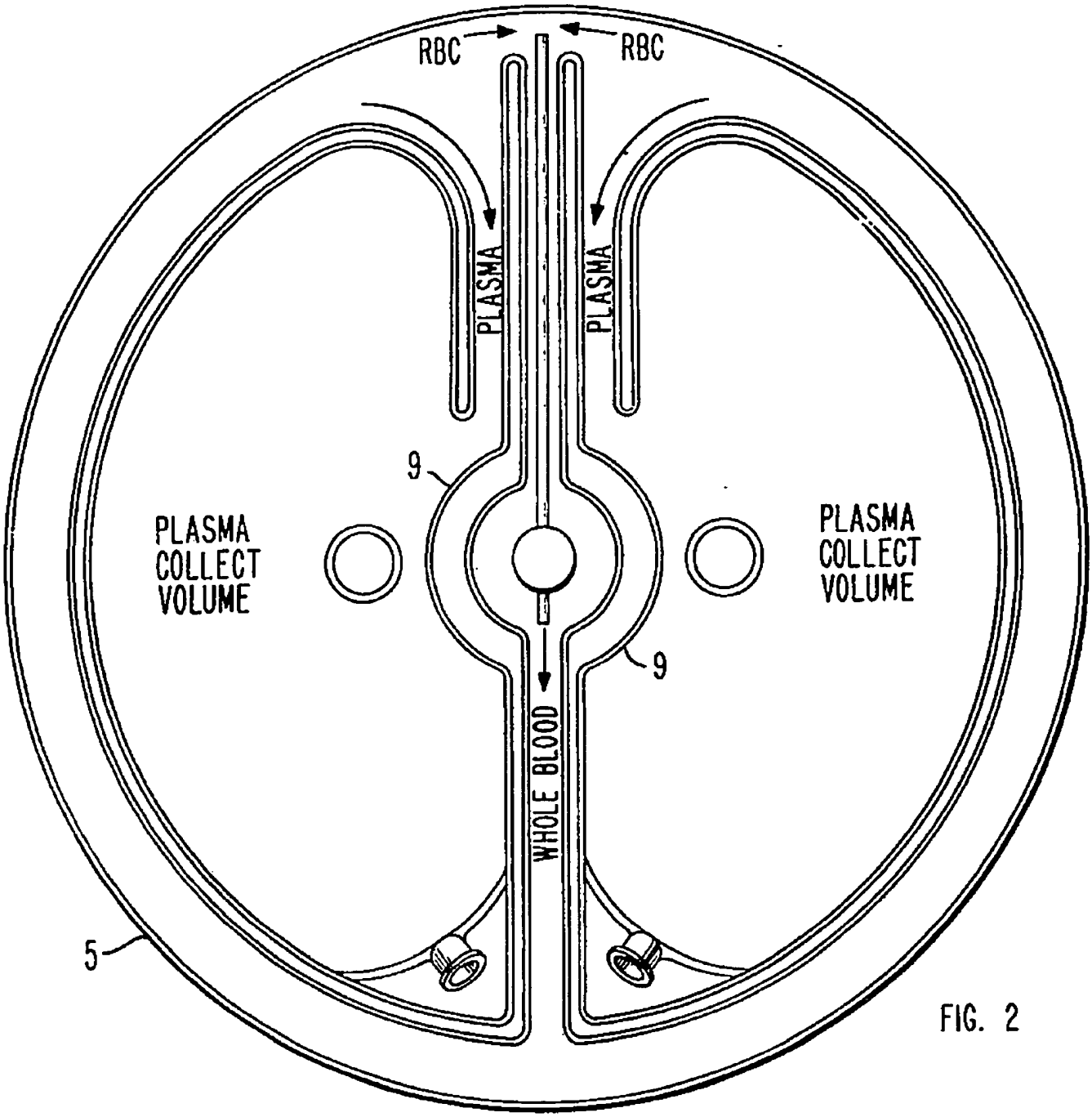
RBC
RBC
PLASMA
PLASMA
9
PLASMA
COLLECT
VOLUME
PLASMA
COLLECT
VOLUME
WHOLE BLOOD
9
5

FIG. 2

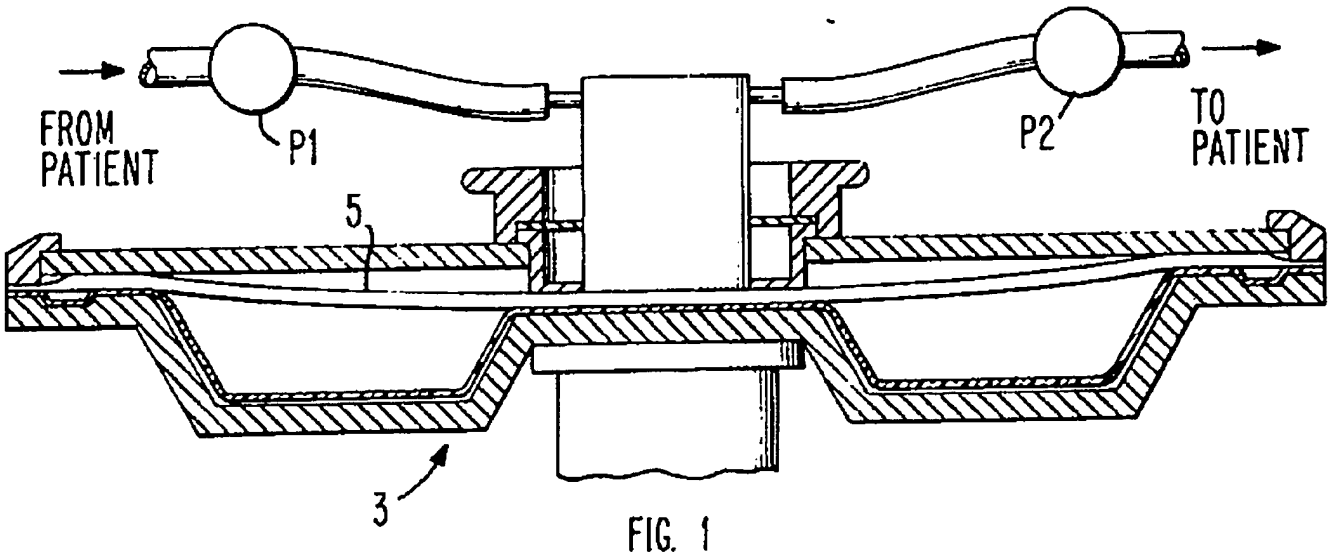
FROM
PATIENT
P1
P2
TO
PATIENT
5
3

FIG. 1